

SEP 7 2000

disposing a crystallization promoting material in contact with said semiconductor film either before or after said patterning, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating; and etching the peripheral portions of said patterned semiconductor film after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

6. (Amended) A method for manufacturing a semiconductor device comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] on an insulating surface;

patterning said semiconductor film into a patterned semiconductor film having a peripheral portion;

providing defects and/or stress in said peripheral portion of said patterned semiconductor film simultaneously with said patterning step;

disposing a crystallization promoting material in contact with said semiconductor film, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating wherein said metal segregates in said peripheral portion during the crystallization; and

etching said peripheral portion after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

22. (Amended) A method for manufacturing a semiconductor device comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] on an insulating surface provided over a quartz substrate;

patterning said semiconductor film into a patterned semiconductor film having peripheral portions;

disposing a crystallization promoting material in contact with said semiconductor film either before or after said patterning, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating at a temperature of 800 to 1100°C; and

etching the peripheral portions of said patterned semiconductor film after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

23. (Amended) A method for manufacturing a semiconductor device comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] on an insulating surface provided over a quartz substrate;

patterning said semiconductor film into a patterned semiconductor film having a peripheral portion;

providing defects and/or stress in said peripheral portion of said patterned semiconductor film simultaneously with said patterning step;

disposing a crystallization promoting material in contact with said semiconductor film, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating at a

temperature of 800 to 1100°C wherein said metal segregates in said peripheral portion during the crystallizing; and

etching said peripheral portion after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

26. (Amended) A method for manufacturing an integrated circuit comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] over a quartz substrate;

forming an opening in said semiconductor film by etching a portion of said semiconductor film;

disposing a crystallization promoting material in contact with said semiconductor film either before or after the formation of said opening, said crystallization promoting material containing a metal; and

crystallizing said semiconductor film provided with said crystallization promoting material by heating after the formation of said opening to form a crystalline semiconductor film to become at least a channel forming region.

27. (Amended) A method for manufacturing an integrated circuit comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] over a quartz substrate;

patterning said semiconductor film into a patterned semiconductor film having peripheral portions;

disposing a crystallization promoting material in contact with said semiconductor film either before or after said patterning, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating at a temperature of 800 to 1100°C; and

etching the peripheral portions of said patterned semiconductor film after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

28. (Amended) A method for manufacturing an integrated circuit comprising the steps of:

forming a non-single crystalline semiconductor film [to become at least a channel forming region] over a quartz substrate;

patterning said semiconductor film into a patterned semiconductor film having a peripheral portion;

providing defects and/or stress in said peripheral portion of said patterned semiconductor film simultaneously with said patterning step;

disposing a crystallization promoting material in contact with said semiconductor film, said crystallization promoting material containing a metal;

crystallizing said patterned semiconductor film provided with said crystallization promoting material by heating at a temperature of 800 to 1100°C wherein said metal segregates in said peripheral portion during the crystallizing; and

etching said peripheral portion after said crystallizing to form a crystalline semiconductor island to become at least a channel forming region.

Please add new claims 29-48 as follows:

29. (New) The method of claim 1 wherein said peripheral portions are side peripheral portions of said patterned semiconductor film.

30. (New) The method of claim 6 wherein said peripheral portion is a side peripheral portion of said patterned semiconductor film.

31. (New) The method of claim 12 wherein said peripheral portion is a side peripheral portion of said patterned semiconductor film.

32. (New) The method of claim 22 wherein said peripheral portions are side peripheral portions of said patterned semiconductor film.

33. (New) The method of claim 23 wherein said peripheral portion is a side peripheral portion of said patterned semiconductor film.

34. (New) The method of claim 24 wherein said peripheral portion is a side peripheral portion of said patterned semiconductor film.

35. (New) The method of claim 27 wherein said peripheral portions are side peripheral portions of said patterned semiconductor film.

36. (New) The method of claim 28 wherein said peripheral portion is a side peripheral portion of said patterned semiconductor film.

37. (New) A method for manufacturing a semiconductor device comprising:

providing a semiconductor film with a crystallization promoting material;

introducing phosphorus into a selected region of said semiconductor film;

crystallizing said semiconductor film with said selected region of said semiconductor film containing said phosphorus to getter said crystallization promoting material during said crystallizing; and



removing at least said selected region of said semiconductor film.

38. (New) The method of claim 37 wherein said gathering of said crystallization promoting material is caused by a gathering effect of said phosphorus.

39. (New) The method of claim 37 wherein said semiconductor film comprises silicon.

40. (New) The method of claim 37 wherein said crystallization promoting material comprises an element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

41. (New) A method for manufacturing a semiconductor device comprising:

providing a semiconductor film with a crystallization promoting material;

introducing phosphorus into a selected region of said semiconductor film;

crystallizing said semiconductor film by heating with said selected region of said semiconductor film containing said

phosphorus to getter said crystallization promoting material during said crystallizing; and

removing at least said selected region of said semiconductor film.

42. (New) The method of claim 41 wherein said gathering of said crystallization promoting material is caused by a gathering effect of said phosphorus.

43. (New) The method of claim 41 wherein said semiconductor film comprises silicon.

44. (New) The method of claim 41 wherein said crystallization promoting material comprises an element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

45. (New) A method for manufacturing a semiconductor device comprising:

providing a semiconductor film with a crystallization promoting material;

introducing phosphorus into a selected region of said semiconductor film;

crystallizing said semiconductor film with said selected region of said semiconductor film containing said phosphorus to getter said crystallization promoting material during said crystallizing; and

removing at least said selected region of said semiconductor film to form a crystalline semiconductor island to become at least a channel forming region.

46. (New) The method of claim 45 wherein said gathering of said crystallization promoting material is caused by a gathering effect of said phosphorus.

47. (New) The method of claim 45 wherein said semiconductor film comprises silicon.

48. (New) The method of claim 45 wherein said crystallization promoting material comprises an element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.